

## CHAPTER V: FLOATING LAUNCHES

### A. General description

Floating launches are structures that provide access while floating on the water. Typically composed of a deck, frame, and floats, they are anchored to the shore. Paddlers launch from the deck, which is supported by the frame, while the floats beneath the frame provide buoyancy. Anchoring devices help to stabilize the launch and protect it from the elements. Pile guides are often used, permitting launches to adjust to changing water levels while keeping their decks horizontal and steady. When floating launches attach to connecting structures with varying heights(e.g., gangways), pile guides can help to maintain a relatively small cross slope, making launches more likely to be accessible to paddlers with disabilities.

Floating launches are most effective when used on water with little debris and minimal exposure to strong currents or waves. In general, they can withstand flow rates up to 0.25 feet per second, although those launches using stronger anchors may be able to handle stronger flows. Floating launches should be removed during flooding, however, and, unless they are specifically designed to endure ice formation, they should be removed before any freezing occurs.

### B. Materials

A variety of materials may be used for decks, frames, and floats:

#### 1. Decks

- Wood is simple and inexpensive to use; pine, redwood, cedar, and cypress are common choices but will rot unless treated with a preservative (*see notes on treated wood below*)
- Metal decking, such as aluminum, is used mainly for heavy-use launches that also serve motorized boats; metal grating provides effective drainage and traction
- Alternative materials include wood/plastic composites, vinyl, and various plastics made of recycled materials that are made to look like wood; these materials can be more expensive and usually require additional support devices, but they are more resistant to damage and warping than wood and will require less maintenance

#### 2. Frames

- Wood is often used, but will last only 2 to 3 years if untreated
- Metal, either lightweight aluminum or galvanized metal
- Plastic, which will not decay in water as rapidly as other materials
- Steel tubing may be used both as floats and frames; attaches to deck with brackets; steel can be coated to increase durability

#### 3. Floats

- Polyethylene, the most frequently chosen plastic, can function as both frame and float; they may have grooves and brackets that attach easily to shoreline structures or floats may have built-in cleats, which facilitate anchoring

\*Since additives used during manufacturing many types of plastics may affect their durability, the durability needs for the launch site should be considered when choosing materials.

- When expanded polystyrene foam (EPS) is used, the best choice is the extruded closed cell (Styrofoam is a common brand name) because it has the strongest inner structure; it must be used with a protective covering to prevent damage from chemicals, water, and debris
- Plastic float drums made of rotationally molded polyethylene are more durable than EPS and provide protection from impact damage, animals, and the effects of solar radiation; these are most effective when filled with EPS, which act as shock-absorbers and protect drums from losing buoyancy if damaged
- Fiberglass float drums are not as strong as plastic float drums or as readily available, but they are lightweight and also have resistant qualities
- Foam-filled tires provide effective stabilization in areas with heavy debris or current; these can be made of recycled tires filled with EPS and capped with plywood; commercial versions are available, which are more reliably sealed and attached
- Recycled 50-gallon cooking oil drums can also be used but must be cleaned professionally to safeguard against contamination; *motor oil drums should never be used*
- Concrete floats are sturdy and stable but also costly and heavy
- High-density polyethylene (HDPE) can be used for both flotation and for framing

\* This information is provided by the U.S. Forest Service publication entitled *Floating Trail Bridges and Docks*, which is available online at <http://www.fs.fed.us/na/wit/WITPages/bridgecatlog/materials/index.htm>

## ***Treated Wood***

When using any type of treated wood, serious caution should be taken in regard to the environment and to the health of those involved in construction. While treated wood can last up to five times as long as untreated wood, it is important to understand the risks involved in using different wood preservatives and chemical treatments. The USFS publication mentioned above includes details about treated wood (see pp. 5-6) as does the Student Conservation Association publication, *Lightly on the Land*. Additionally, the Western Wood Preservers Institute (<http://www.wwpinstitute.org/pdffiles/bmpsinaquatic.pdf>) offers best management practices for using treated wood.

Several manufactured materials made to look like and act like treated wood provide non-toxic alternatives. Trex (<http://www.trex.com>) is one popular commercial choice. It is not as structurally rigid as wood and will need more support. For example, if a 2' x 6' planking needs support every 2', then an alternative material such as Trex may need a support approximately every 16" to 18". Another factor to consider is expansion and shrinkage. While wood swells and shrinks across the grain with moisture gain or loss, respectively, Trex may expand and shrink in all dimensions.

## C. Design variations/specifications

### *A floating launch:*

- May be used in combination with bridges, gangways, fixed piers, or bulkheads to enable paddlers to put-in at water of sufficient depth; any of these structures may be attached with hinges and used across shallow areas to provide access to a floating dock; they should have slopes of less than 20 degrees (or no more than 8.33% to meet ADA accessibility) and should remain horizontal at high water levels; they provide maximum stability when equipped with handrails
- May be used in combination with elevated walkways or geotextile mats in environmentally sensitive areas, in order to prevent damage to riparian areas (*see Chapter XI for further information*)
- May be used in combination with motorized boat ramps to enable hand-launching
- Needs a deck that rises at least 2 feet above water to enable safe access
- Should float on at least 3 feet of water
- Should not rest too high above the surface of the water, as this can make transitions from canoes and kayaks difficult

## D. Advantages

- Adjusts to fluctuating water levels - (it's always the "right" height)
- Provides a sturdy surface, as a solution to unsafe conditions or inconvenient access
- Has few long-term environmental effects
- Is easily removable in inclement weather or heavy flows, therefore requires less maintenance and may last longer
- Provides an alternative to gravel ramps that will erode in areas of strong waves or currents
- Is easy to purchase and assemble; allows for flexibility in design
- When wet, is not as slippery as lacuches with sloped surfaces
- Is unlikely to scratch boats
- ☐ Keeps feet dry during cold weather paddling

## E. Disadvantages

- Not "appropriate" for all access locations; use should be limited to areas where: the minimum water depth at all times is 3 feet, changes in water level are slow and long-term, and there is minimal exposure to the elements
- May not consistently meet ADA accessibility guidelines, since slopes of connecting structures may alter with changing water levels; locks and piles may be used in some situations to create a "certain" elevation or minimum height for a structure that will not deviate - this keeps the cross slope to a minimum
- In order for the launch to be in water of sufficient depth, it may be exposed to stronger currents than it can withstand; additional structures may be needed
- The anchoring process must be carefully considered, as it must take into account particular climatic and site conditions; when placing anchor piles, the combination of wind, wave, current, and impact forces should be accounted for
- Not effective for use in areas where tidal fluctuations are rapid and extreme; floats may be "beached" at low tide or floats can disrupt sediments as they rise with high tide

## F. Case examples, designs, photos

### 1) Newport Boat Ramp, Christina River, Newport, Delaware

**Problem:** This site on the Christina River, a tidal river flowing into the Atlantic Ocean, was initially accessible from a 32' wide x 105' long concrete ramp that connects to a concrete anchor pier. The site experiences heavy traffic from both paddlers and motorized boaters, and the shoreline at the access area has a steep slope of approximately 30 percent grade making it difficult to transport boats to the water.

**Solution:** The concrete anchor pier and ramp remain at the site and two parallel transfer plates have been connected by 3" hinges to either side of the ramp, along its longer edge, allowing for easier access to the water and increasing the amount of launching space. One of the plates, which is composed of three aluminum sections (two sections are 21' 3" long and one is 27' 9" long), is 8' wide and a total of 70'3" long and provides an accessible route, with an 8.33% 1:12 or slope, to an aluminum floating launch serving both paddlers and motorized boaters. The 32' x 10' aluminum floating launch, which has a 10' x 4' inset designated as a canoe station, is located about 12' from the shoreline (at low tide) in an area with a minimum water depth at low tides of 4' to 5'. The canoe station is built on the back side of the launch, where the area is protected from heavy currents, so that paddlers can launch separately from other boaters.

Delaware DNR has used this type of launch for about 15 years and has found that it requires relatively little maintenance, as aluminum can be welded relatively inexpensively every few years to reinforce areas that have worn. Floating launches are removed each year before the first icing, however several structures remain on the water year-round to accommodate waterfowl fisherman. Delaware DNR has retrofitted several launches, using similar aluminum designs, to accommodate more paddlers, including those with disabilities.

#### Specifications:

**Deck:** 9" thick ribbed, marine-grade aluminum (treated alloy 60-61 with salt protection)  
2" square tube stringers

**Frame:** Treated pine fender; 3" square curbing at canoe station

**Floats:** 15" and 18" pontoons filled with urethane foam  
supported by 24" x 7'6" pontoon at its base

**Anchors:** Pile guides

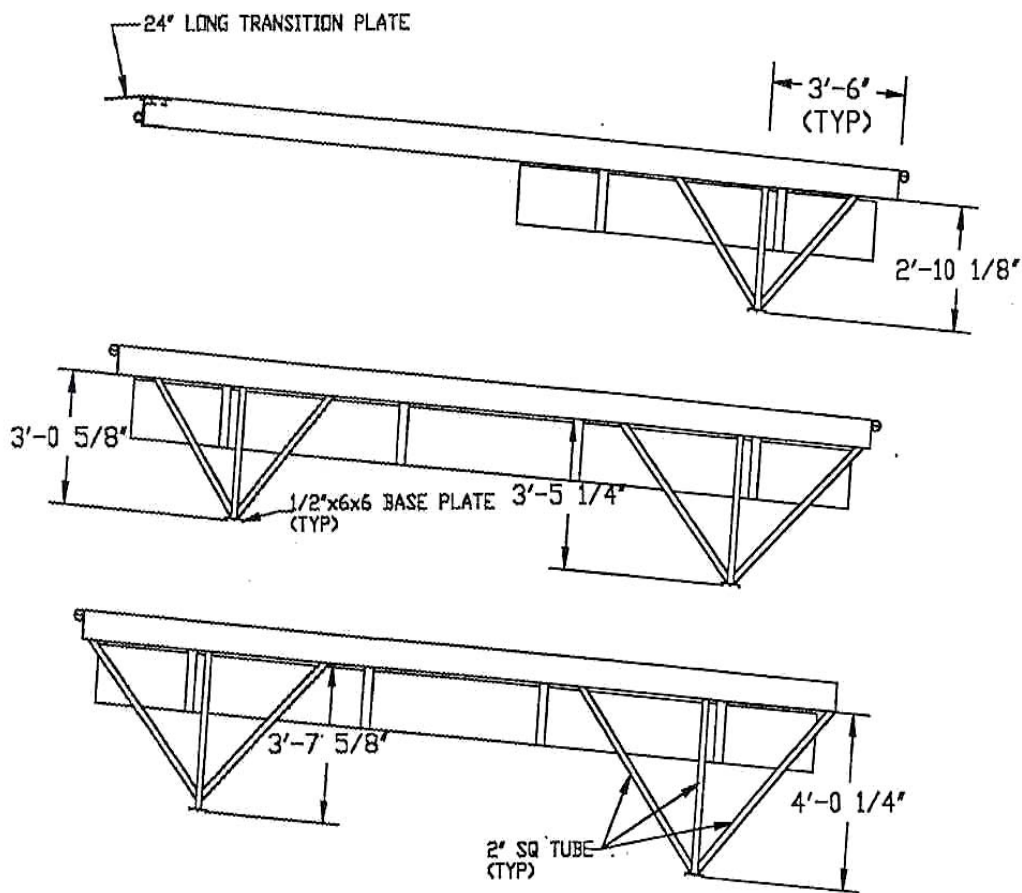
**Handrails:** 12" high x 10' long x 1½" wide at canoe station

**Supports:** Roller pile guides

**Transition plate:** Three hinged aluminum sections, two are 8' x 21'3" and one is 8' x 27'9"

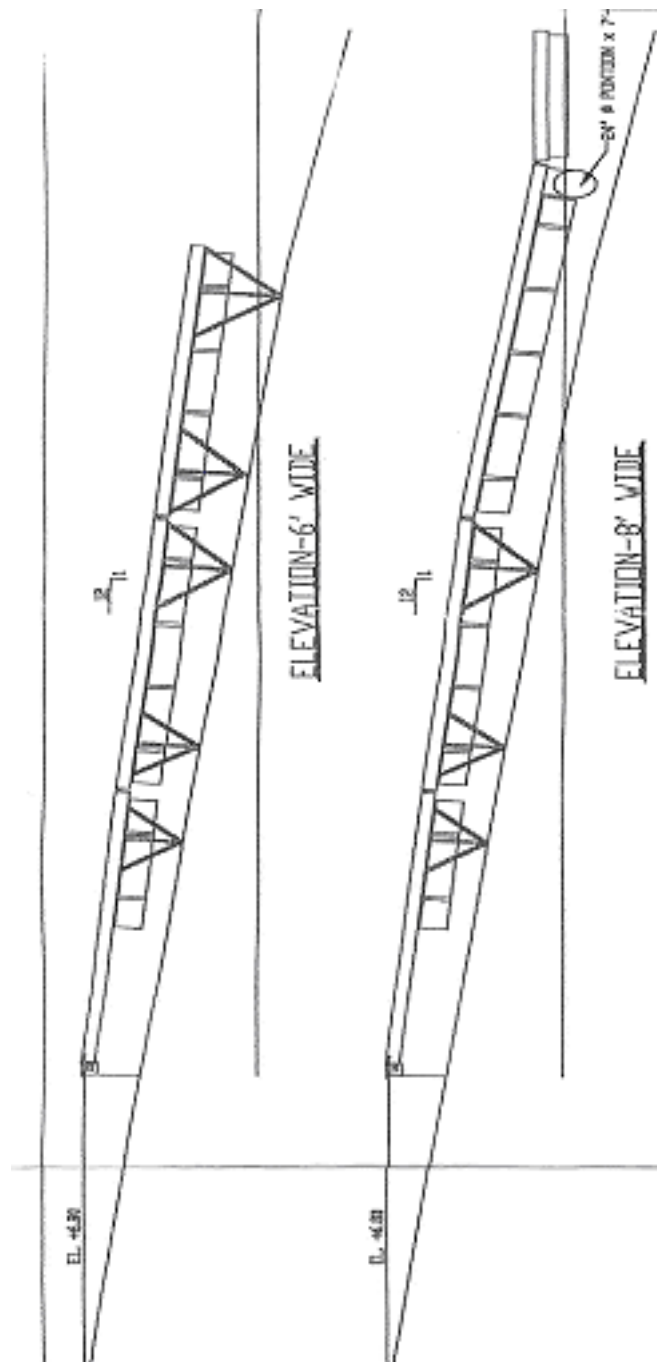
Designs for Newport Boat Ramp follow, courtesy of Lacy Nichols  
Delaware Department of Natural Resources and Jon Fleischman of Gator Dock & Marine, INC.:

**Diagram 5A: Detailed elevation of transition plates, Newport Boat Ramp**

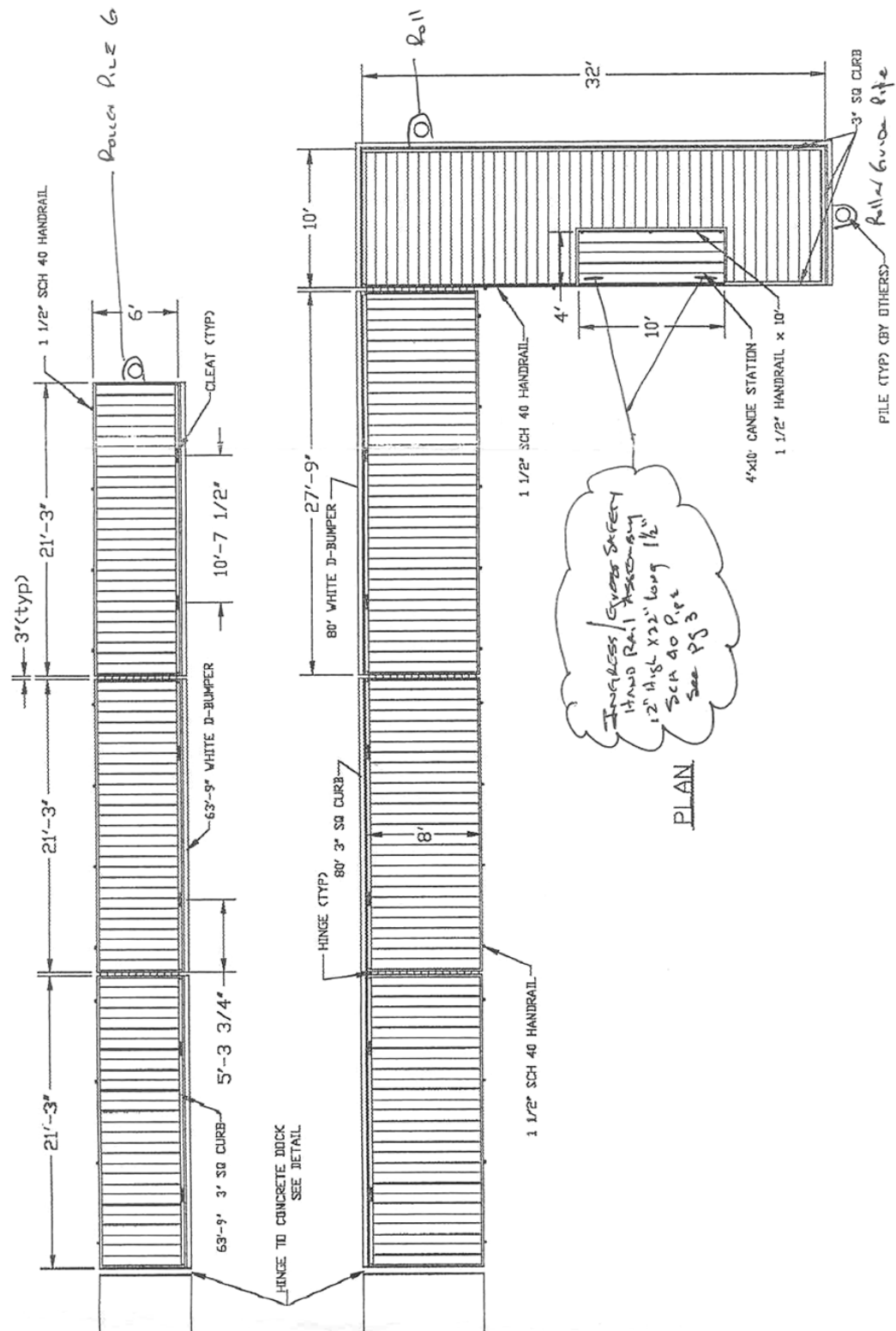


STANCHION DETAILS

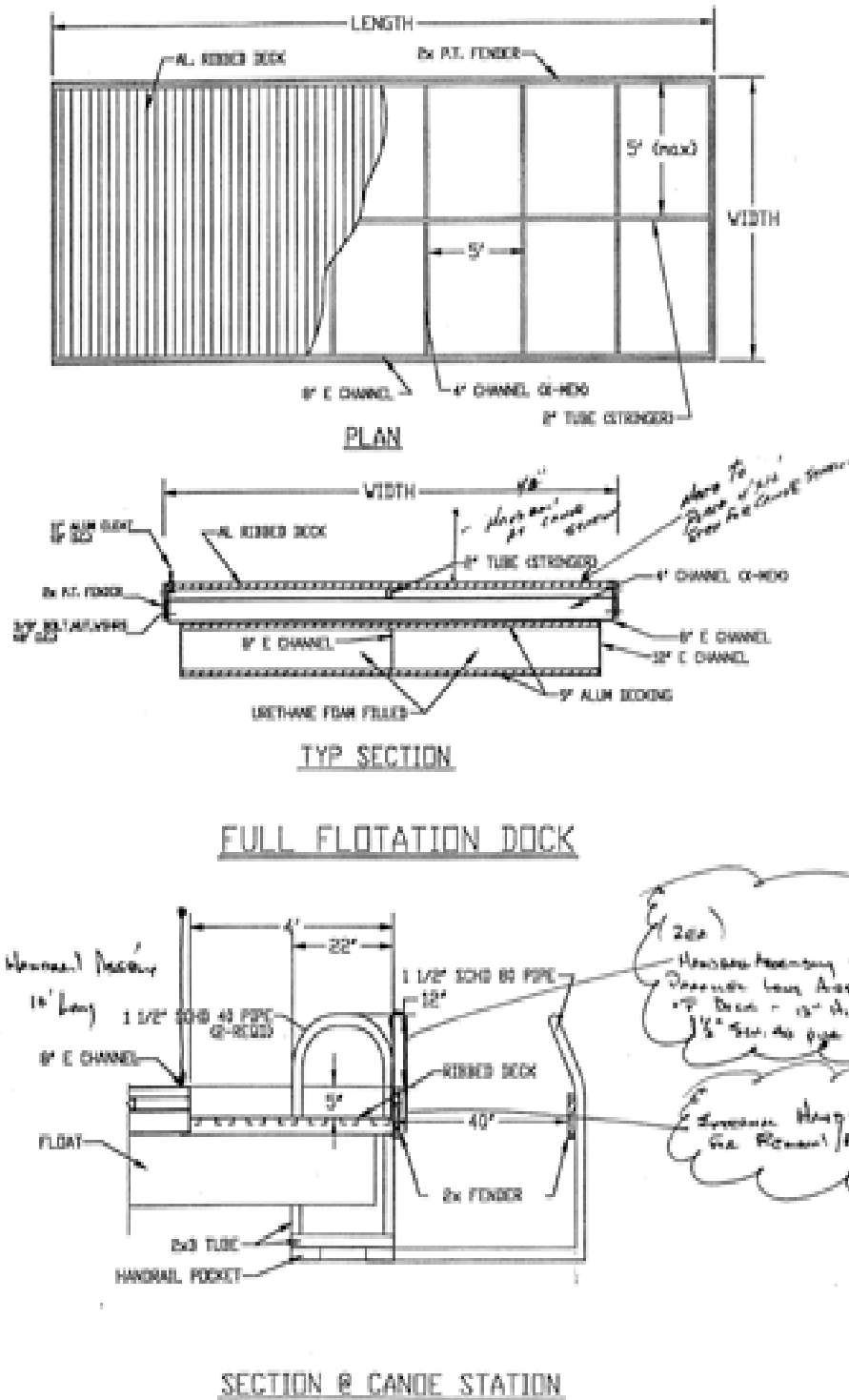
**DIAGRAM 5B: Elevation of transition plates, showing 1:12 slope  
Newport Boat Ramp**



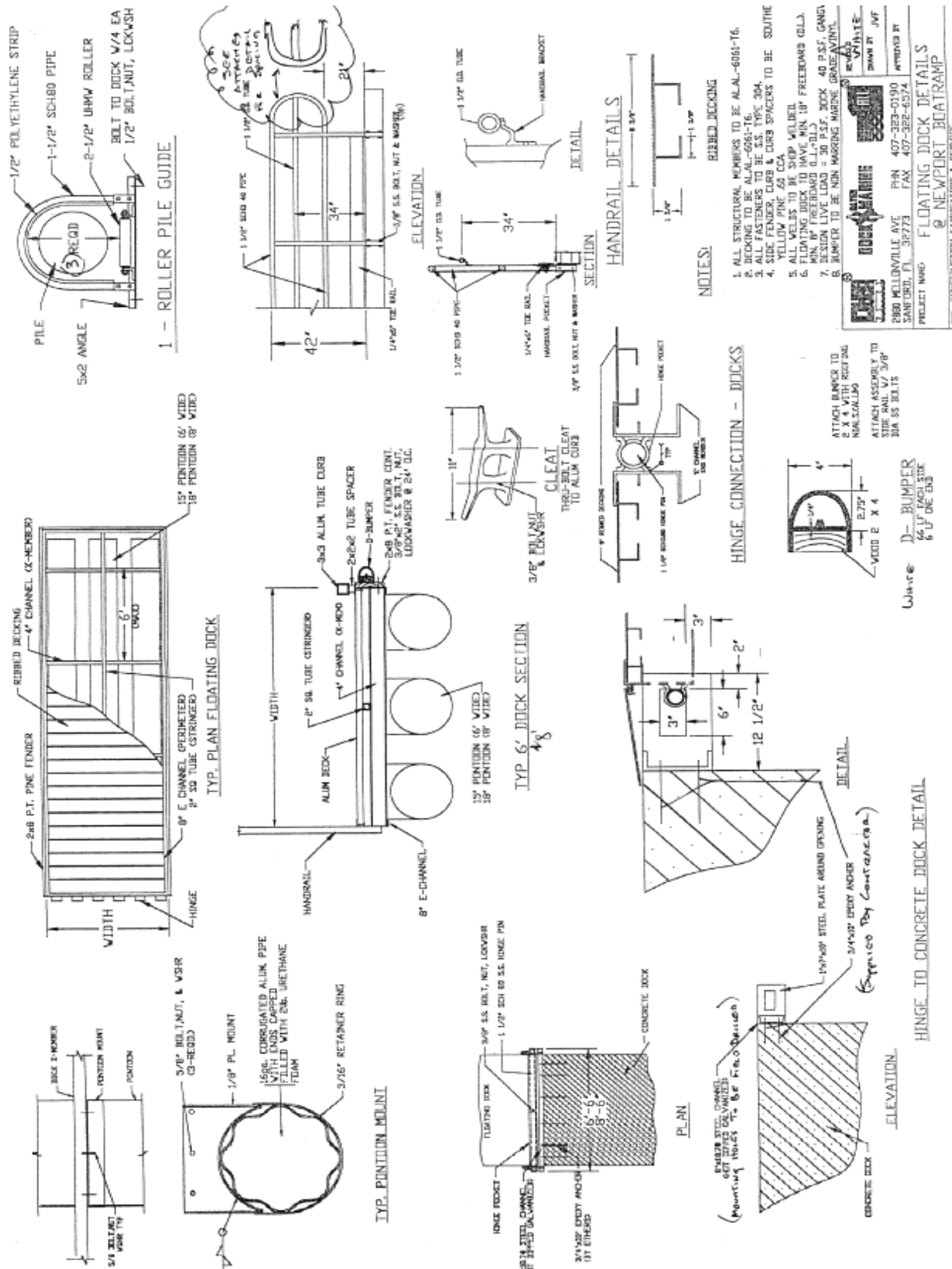
**DIAGRAM 5C: Plan view of deck and canoe station**  
**Newport Boat Ramp**



**DIAGRAM 5D: Section of floating launch and canoe station  
Newport Boat Ramp**







2) South Prong River, North Carolina State Parks – Bayboro, North Carolina

*Problem:* Paddlers shared a crowded concrete boat ramp with motorized boaters. Concrete surface made launching difficult for kayakers and caused damage to the bottoms of some boats.

*Solution:* A floating dock was installed along the hardened shoreline and attached to a boardwalk for easy access. This provided a separate and more suitable launch site for paddlers. The project was funded by North Carolina State Parks “Adopt-a-Trail” program.

Specifications:

*Frame:* 2" x 10" salt treated wood

*Deck:* 2" x 6" salt treated wood

*Floats:* Two 20" float drums, Follansbee Series Three

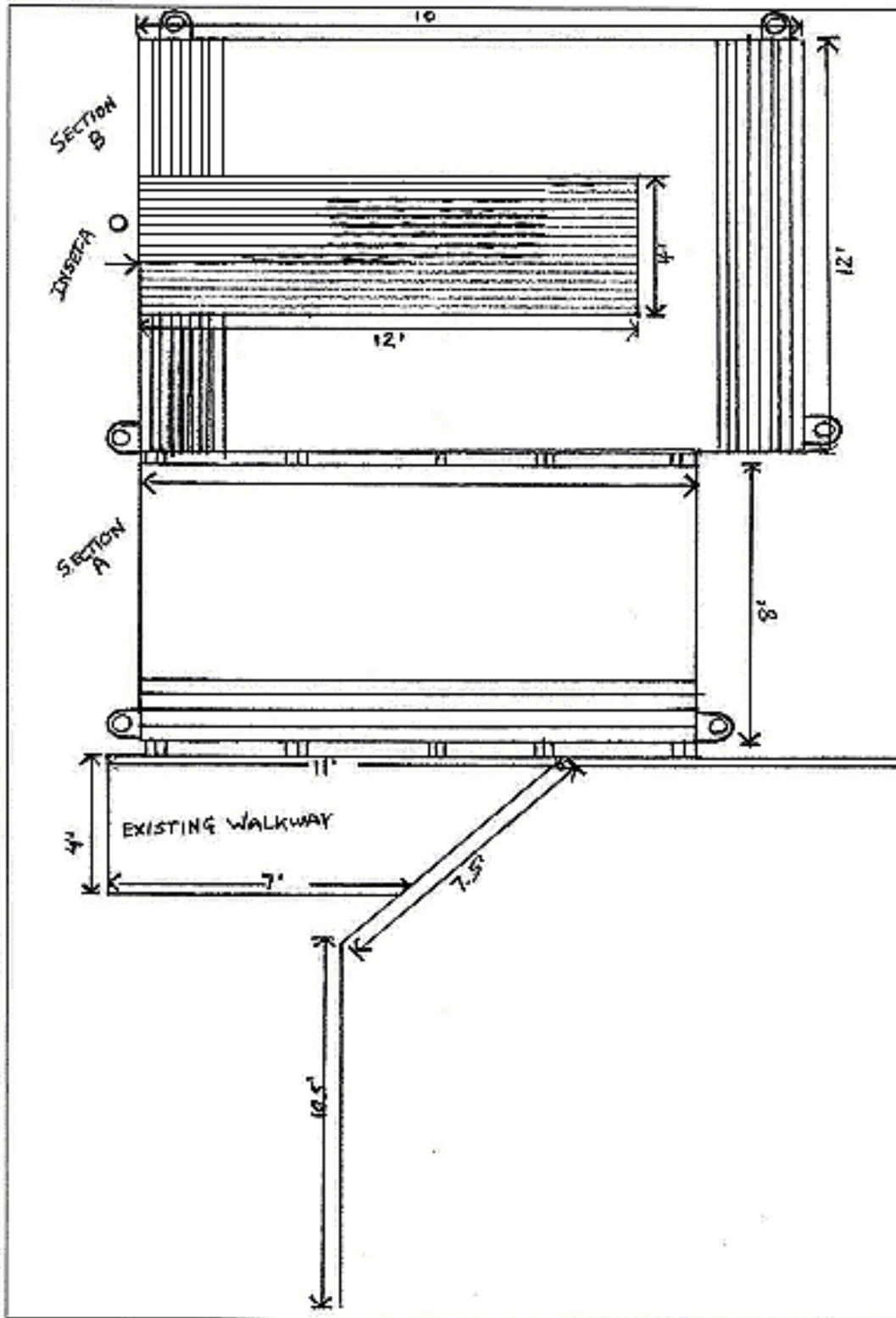
*Inset:* 4' wide x 12' long, sloping from 9¼" to 2", covered with 2" x 6" salt-treated wood deck;

*Anchors:* Pile guides

Wood floating launch is 8' x 13.5' connected to boardwalk with a 8' long slide

Slope is ADA accessible at some water levels; average distance to water is 32"

**DIAGRAM 5F: Plan view, Bayboro launch**



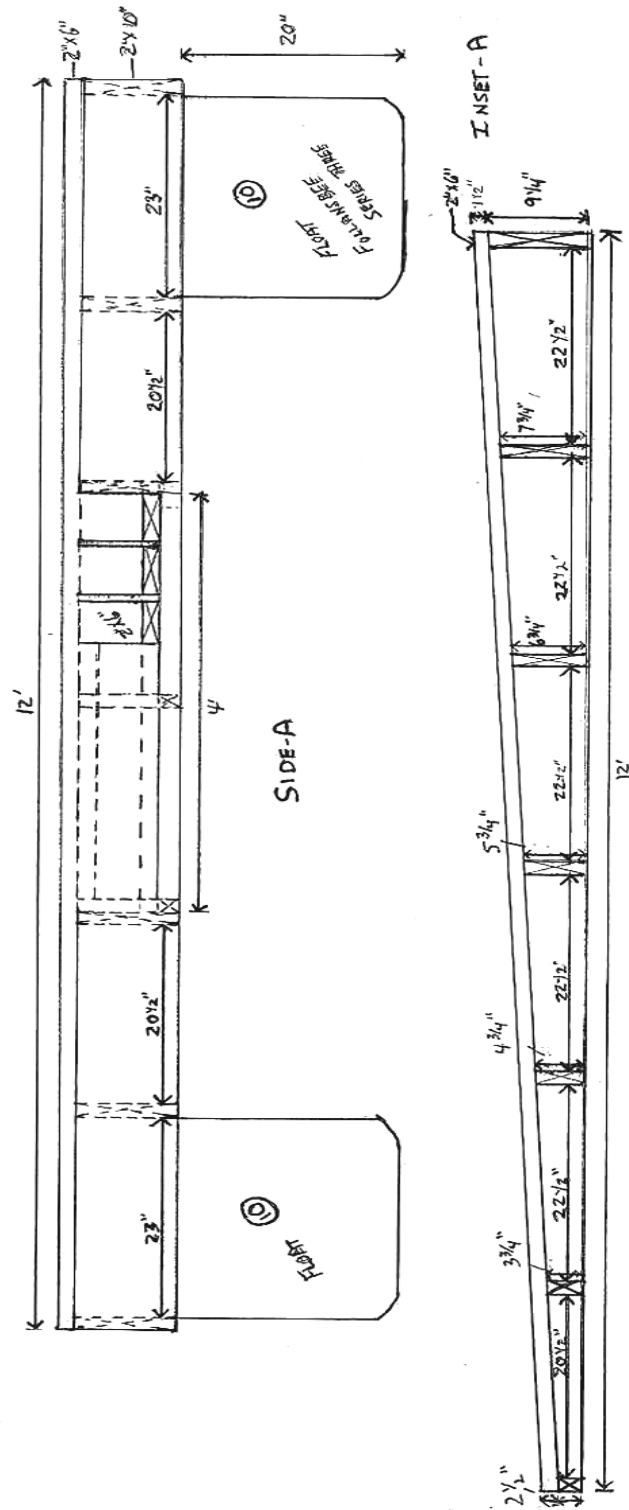
Hand-drawn structural framing plan for a deck, labeled "SECTION - A" on the right. The plan shows a rectangular layout with dimensions 24' x 16'. The framing consists of 2x10 inch joists and 2x10 inch stringers. The deck is labeled "EXISTING WALKWAY" and "EXISTING 2x10 SALT TREATED". The framing is labeled "ALL FRAMING IS 2x10 SALT TREATED" and "DECKING IS 2x10 SALT TREATED". The plan includes a title block with "SECTION - A" and "CANOE DOCK-BASED". The title block also includes a table for "REVISIONS" and a table for "PERMITS".

REVISIONS	
NO.	DATE
1	
2	
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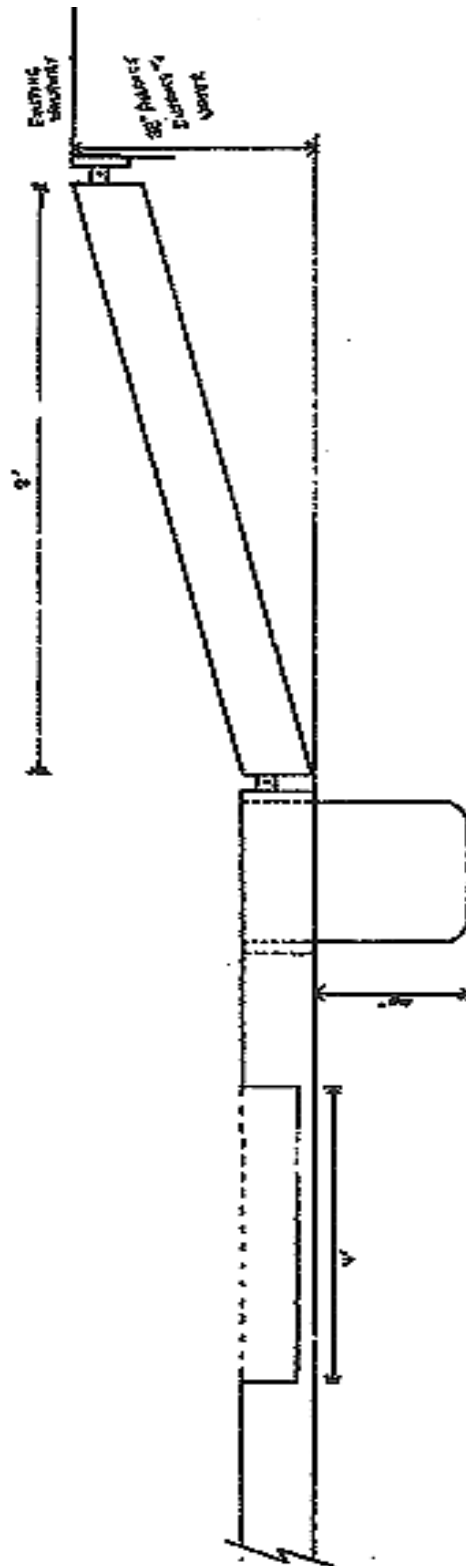
PERMITS	
NO.	DATE
1	
2	
3	



**DIAGRAM 5I: Section view of launch inset, Bayboro launch**



**DIAGRAM 5J: Side profile at water elevation, Bayboro launch**  
Shows launch connecting to existing walkway





3) Annsville Creek Paddlesport Center, Hudson River Watertrail  
Hudson Highland State Park, New York

Commercially manufactured floating launches may be used in combination with other structures, such as gangways or pile launches. Wholesalers sell floating launches built of pre-fabricated modular sections that can be connected together to adapt to site specifications.

The following photos and designs portray access at Annsville Creek to the Hudson River Water Trail, a tidal river with water levels that typically fluctuate at least 4 feet between tides. Several different structures are used at this site to accommodate paddlers at different water levels: a modular polyethylene floating launch connects to a wooden floating dock that is accessible from a concrete landing on the shore via two parallel aluminum gangways. The floating launch has four kayak slots or boat slides, where paddlers can easily transition into and out of the water. The entire launch configuration is ADA accessible and is used to teach paddlers with disabilities, as well as to train instructors who teach paddlers with disabilities.

Specifications:

*Floating launch:* 22' wide x 30' long; structure made of 234 polyethylene polymodules (total)

*Wooden floating dock:* 8' wide x 30' long, connects to floating launch and two transition plates

*Transition plates:* Two parallel aluminum gangways, each 4' wide x 30' long, with steel handrails

*Concrete landing:* 4' wide x 25' long at shoreline; extends into water 42" below shoreline level

*Reinforcements:* Rip-rap extends from edge of concrete landing across half of gangway length

*Total width of kayak slots = 16.67'*

Small upright and inverted modules along outer edge of launch are vented to permit adjustment



Photo by Ken Allen

**Photo 5A: Floating launch provides access to Hudson River at varying water levels**





Photo courtesy of Scott Keller

**Photo 5B: Modular polyethylene floats connect to fit site specifications**



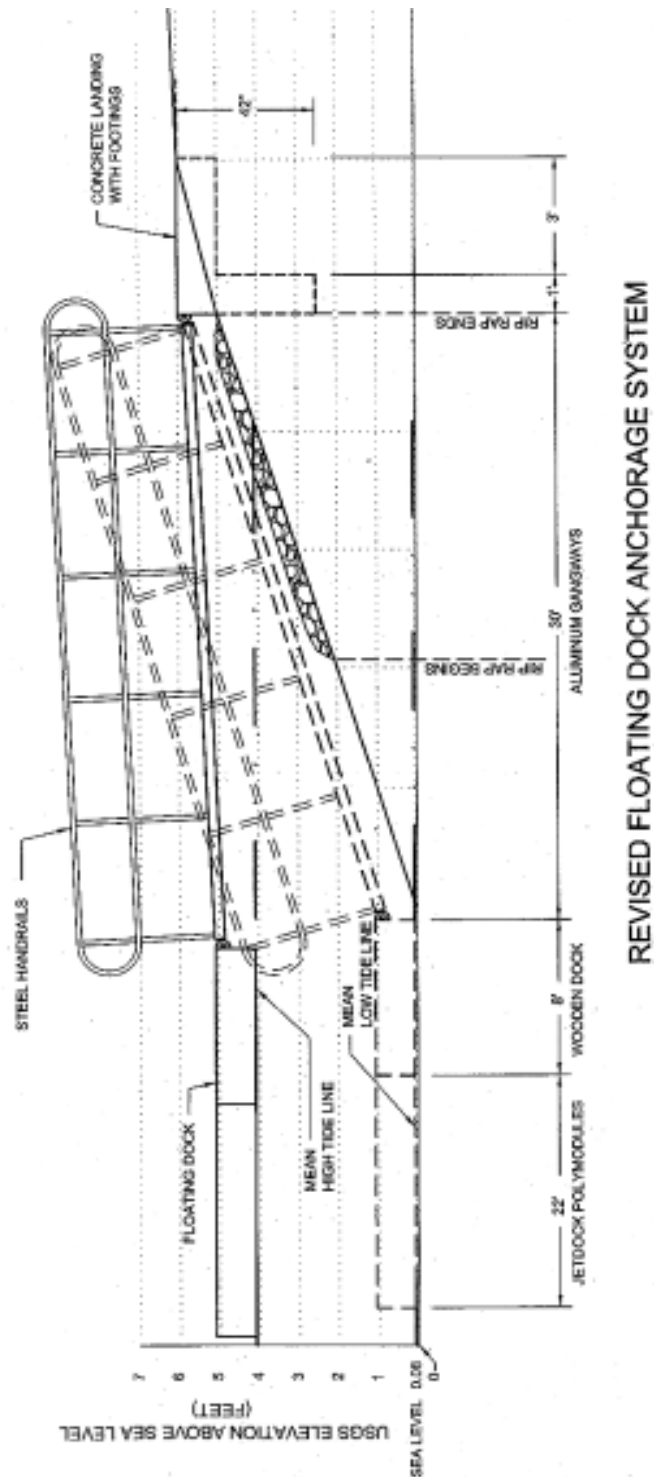
Photo courtesy of Jim Logan  
Hudson Valley Watertrail Association

**Photo 5C: Vented polyethylene modules adjust to accommodate needs of paddlers**

## Designs for Annsville Creek Paddlesport Center, Hudson Highland State Park

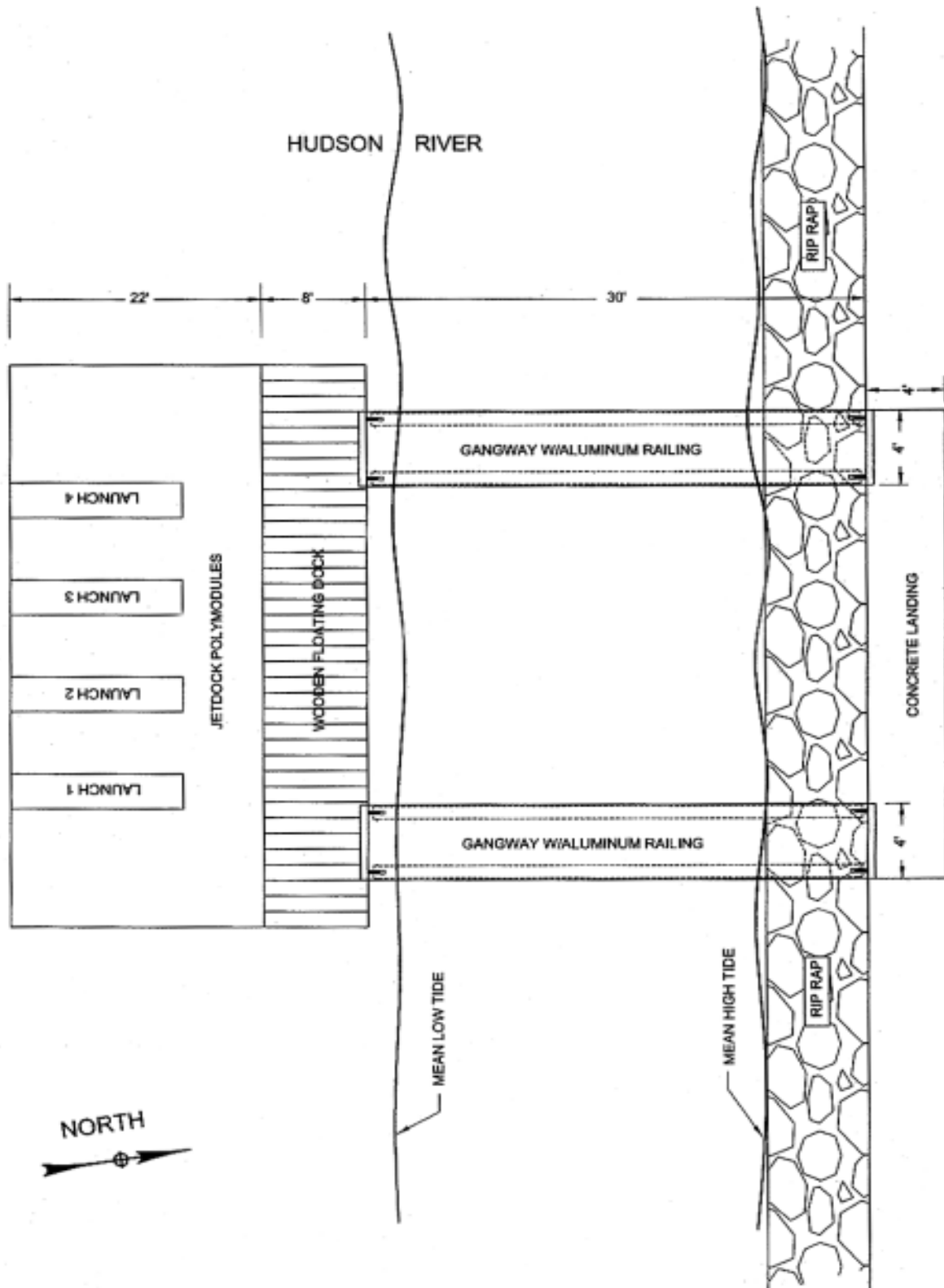
Courtesy of Ken Allen, White Mountain National Forest

**Diagram 5K: Elevation of floating dock and anchorage**



## Diagram 5L: Plan view of floating dock at Annsville Creek

Courtesy of Ken Allen, White Mountain National Forest



### ***Commercial floating launches and floating launch supplies***

The following vendors carry floating launch products and supplies. This is not an exhaustive list and is meant only as a sampling. It is not an endorsement of these companies or their products.

- **Alumidock:** wide variety of floating docks, gangways, stairs - <http://www.alumidock.com>
- **Connect-A-Dock:** modular floating docks and platforms - <http://www.connectadock.com>
- **Dock Floats Ltd.:** <http://www.dockfloatsltd.com>
- **Flotation Systems, Inc.:** maintenance free, expandable aluminum docks - <http://www.aluminumboatdocks.com/Contact.htm>
- **Galva Foam Marine Industries:** <http://www.shoremaster.com/news/28.html>
- **Gator Dock & Marine, INC.:** aluminum floating docks - <http://www.gatordock.com>
- **Jetdock:** custom-made and modular floating launches - <http://www.jetdock.com>
- **Johnstons Docks & Supplies:** stationary and floating docks, dock kits, polyethylene floats - <http://www.dockkit.com/>
- **Marina Accessibility Products, Inc.:** offers a self-leveling gangway lift for physically challenged, designed specifically for floating docks - <http://www.renweb.net/website/marina/>
- **Mod-U-Dock:** maintenance-free, easy installation docks and floating docks with modular design and custom dock building - <http://www.modudock.com/>
- **Northstar Vinyl Products, LLC:** 21 polymer coated wood used in vinyl seawalls, docks, decks - <http://www.northstarvinyl.com/>
- **PlasTEAK Products:** uses recycled plastic - <http://www.plasteak.com/>
- **TIECO Floating Structures:** steel tube floating docks - <http://www.tiecomarine.com/>
- **Tiger Boat Docks & Lifts:** parts and plans for do-it-yourself projects - <http://www.tigerboatdocks.com/>
- **Traveldock:** portable lightweight docks for inland waterways - <http://www.traveldock.com.au/>

4) Janes Island Kayak Dock, Dougherty Creek Canal, Janes Island State Park, Maryland

*Problem:* Paddlers needed an alternative launch site at a busy marina. The existing concrete boat ramp was crowded with powerboat use and hazardous to paddlers due to its slippery surface and steep incline. Since the entire shoreline is bulkheaded, there were no “soft landing” alternatives to provide paddlers with access to the water.

*Solution:* Maryland Department of Natural Resources purchased a floating 8' x 20' dock designed specifically for canoes and kayaks that attaches to bulkhead pilings with metal rings. The new launch was placed outside the entrance to the marina basin so that paddlers do not have to cross incoming and outgoing boat traffic into the basin. Paddlers access the launch from a ladder, so it is not easily accessible to those with disabilities.



Photo courtesy of Nita Settina  
Maryland Department of Natural Resources

**Photo 5D: Floating launch attached to bulkheads can be accessed from the shore by a ladder**

Specifications:

*Deck:* 2' x 6' with 3" x 6" side stringers

*Frame:* Wood, 2' x 6' with 3" x 6" cross stringers; ¼" steel brackets reinforce outside corners

*Floats:* Polyethylene shell filled with foam, 8" x 20" x 72" long



**Photo 5E: At Janes Island’s busy marina, the floating launch provides access to paddlers at a safe distance from heavy motor boating traffic**



**Photo 5F: Situated lower than the boardwalk, the floating launch allows easy access to the water**

Photos courtesy of Nita Settina  
Maryland Department of Natural Resources